# REMARKS

This communication is submitted in response to the Office Action dated October 13,

2011. Claims 1, 7, 15, 22, 23, 24, 30, and 33-36 are amended, and no claims are canceled or

added by this Response. Claims 1-7, 15-18, 22-24, 26-27, 30-31, and 33-36 remain pending in

this application. It is noted that the Disposition of Claims section of the Office Action Summary

incorrectly lists claim 32 as pending. However, claim 32 was previously canceled.


## *The Rejection of Claims Under § 103*

*Claims 1-6, 15, 23-24, 26-27, 31, and 34-36:*

Claims 1-6, 15, 23-24, 26-27, 31 and 34-36 were rejected under 35 U.S.C. § 103(a) as

being obvious over Yamano (US 2004/0066363) in view of Smaragdis (US 2005/0021333).

Independent claims 1, 15, 23, 24, and 34-36 include amendments to clarify certain aspects of the

present subject matter. Some examples of support for the amendments can be found in the

Application as-filed on page 7 last two paragraphs, page 11 lines 2-4, page 11 last line through

page 12 line 2, and on page 23 first paragraph, including Equation 3.

Applicant respectfully traverses the rejection. A proper *prima facie* case of obviousness

does not presently exist for these claims because Yamano with Smaragdis and/or the reasoning

provided in the office action do not provide each and every element presently recited or

incorporated into these claims.

For example, Applicant cannot find in the cited portions of Yamano and Smaragdis,

among other things,

> *driving a plurality of said row electrodes in combination with a plurality of said*
> *column electrodes to thereby build up a luminescence profile over a plurality of*
> *row scan periods,*

as recited in independent claims 1, 15, 23, 24, and 34-36 and incorporated into claims 2-6, 26,

27, and 31.

Instead, Yamano apparently uses an impulse signal in a single scan period for multiple

(e.g., 4) scanning electrodes for a subframe (*see* Yamano, ¶0298, ¶¶0342-0343, and FIG. 26).

Smaragdis relates to detecting components of non-stationary signals (e.g., a signal generated by a

microphone) and determining a temporal relationship among the components (see Smaragdis,

¶0023) instead of driving a display with a display image.  Thus, combining Yamano with

Smaragdis does not provide the elements listed above.

Additionally, Applicant cannot find

*factorising said image matrix into a product of at least a first factor matrix and a
second factor matrix, said first factor matrix defining row drive signals for said
display, said second factor matrix defining column drive signals for said display,
wherein said factorising comprises calculating values of said first factor matrix
and calculating values of said second factor matrix,*

as presently similarly recited in independent claims 1, 15, 23, 24, and 34-36.

Yamano and Smaragdis do not disclose factorising an image matrix into product (factor)

matrices (i.e., image matrix decompensation).  The Office Action asserts on page 29 that the

recited factorising is provided in Yamano.  More specifically, it appears that the Office Action

interprets Yamano's orthogonal matrix H (referred to as the first matrix) and scan line x signal

line vector (referred to as the second matrix) as representing factor matrices into which an image

matrix is factorised.

In view of the assertions, it appears that the factorising recited in the claims is

misinterpreted in the Office Action.  As explained on page 7 of the Application, the image matrix

is factorised into the two factor matrices defining row and column drive signals for the display.

Neither of the first and second matrices is predefined or predetermined.  Instead, both the first

and second factor matrices are recalculated for each block of image data.  To further prosecution,

the meaning of factorising recited in the claims is clarified as comprising *calculating values of*

*said first factor matrix and calculating values of said second factor matrix.*

Yamano refers in ¶0299 to an orthogonal function of H in FIG. 8, which represents the

driving pattern of the scanning electrodes, and in ¶0501 states that the orthogonal function

created by an orthogonal function ROM.  Thus, the driving pattern of the scanning electrodes is

fixed.  Yamano further states in ¶0308 that "the one certain signal line and picture data are

presupposed at (-1, 1, 1, 1, -1, 1, -1, 1). In this picture data ...," and in ¶312 that *"The*

*accumulation of the rows and columns of the orthogonal electrode picture data are the drive*

*patterns that should be impressed on to the signal electrode as is illustrated in FIG. 9."*  Thus,

Yamano relates to multiplying picture data by a <u>fixed</u> orthogonal matrix H that results in a signal electrode vector, and Yamano therefore does not provide the factorising presently recited in the claims. Consequently, Yamano and Smaragdis and/or the reasoning provided in the Office Action do not provide each and every element recited in the claims.

Further, a person of skill in the art would not reasonably be led to combine Smaragdis with the multi-line scanning (MLS) technique of Yamano. In the MLS technique of Yamano, the driving pattern of the scanning electrodes is fixed by the unvarying orthogonal matrix H (see Yamano, ¶0299). The skilled person would immediately realize that this crude MLS technique would display an approximation of received image data and would reduce the accuracy of component detection. Smaragdis states that "as shown in FIGS. 4A-4B, the non-negative matrix is factored into two non-negative matrices ... such that an error in a non-negative matrix reconstructed from the factors is minimized" (*see* Smaragdis, ¶0033). Because Smaragdis teaches minimization of error, Smaragdis teaches away from the approximating MLS technique of Yamano, and the skilled person would not reasonably be led to combine Yamano with Smaragdis.

The Office Action states on page 4 that it would have been obvious to the person ordinary skill to have used the non-negative matrix factorization of Smargdis in the display of Yamano. However, Smaragdis refers to factoring a non-negative matrix into two non-negative matrices (*see* Smaragdis, ¶0033) while the MLS technique of Yamano refers to determining display signals using the <u>fixed</u> orthogonal matrix H (*see* Yamano, ¶0299 and ¶0501). Thus, the factoring of Smaragdis is apparently technically incompatible with the MLS technique of Yamano.

Also, Smaragdis refers to producing spectral profiles and characteristic profiles using NMF (see Smaragdis, ¶0036). Smaragdis states that spectral profile and characteristic profile for video are shown in FIGS. 9A-9B. The Figures have the form of line graphs, and thus the spectral profile and characteristic profile produced by NMF in Smaragdis is unsuitable for, and would not be used for, respective driving of row and column electrodes. Thus, what is disclosed in Smaragdis would not be suitable for *driving a said pixel of said display using a said row drive signal defined by said first factor matrix and simultaneously a said column drive signal defined by said second factor matrix* as is presently recited in the claims. Therefore, at least for these

several reasons, one of skill in the art would not reasonably be led to combine Yamano with

Smaragdis.

To summarize, a proper *prima facie* case of obviousness does not presently exist for these

claims because Yamano with Smaragdis and/or the reasoning provided in the Office Action do

not provide each and every element recited or incorporated into these claims, and because one of

skill in the art would not reasonably be led to combine Yamano with Smaragdis. Accordingly,

withdrawal of the rejection and allowance of claims 1-6, 15, 23-24, 26-27, 31 and 34-36 is

respectfully requested.


*Claims 7, 22, and 33:*

Claims 7, 22 and 33 were rejected under 35 U.S.C. § 103(a) as being obvious over

Yamano (US 2004/0066363) in view of Smaragdis (US 2005/0021333) and Routley (GB

2389952). Similar to independent claims 1, 15, 23, 24, and 34-36, claims 7, 22, and 33 include

amendments to clarify certain aspects of the present subject matter.

Applicant respectfully traverses the rejection. A proper *prima facie* case of obviousness

does not presently exist for these claims because Yamano with Smaragdis and/or the reasoning

provided in the office action do not provide each and every element recited or incorporated into

these claims.

For example, Applicant cannot find in the cited portions of Yamano and Smaragdis,

among other things,

> *driving a plurality of said row electrodes in combination with a plurality of said*
> *column electrodes to thereby build up a luminescence profile over a plurality of*
> *row scan periods,*

as recited in independent claims 7, 22, and 33.

Further, Applicant cannot find

> *factorising said image matrix into a product of at least a first factor matrix and a*
> *second factor matrix, said first factor matrix defining row drive signals for said*
> *display, said second factor matrix defining column drive signals for said display,*
> *wherein said factorising comprises calculating values of said first factor matrix*
> *and calculating values of said second factor matrix,*

as presently similarly recited in claims 7, 22, and 33.

These elements are not established by a combination of Yamano and Smaragdis at least for the reasons explained previously. Routley apparently fails to provide the missing elements. Accordingly withdrawal of the rejection and allowance of claims 7, 22, and 33 is respectfully requested.

### *Allowable Subject Matter*

Claim 30 was allowed. Applicant acknowledges the allowed subject matter with appreciation.

Claims 16-18 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 16-18 ultimately depend on claim 1. Applicant believes 16-18 to be allowable at least for the reasons explained above in regard to claim 1. Consequently, Applicant declines to amend the claims at this time. Allowance of claim 16-18 is respectfully requested.

## CONCLUSION

Applicants respectfully submit that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 371-2172 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

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